Pre-Algebra Workbook

Exponents

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EXPONENTS

■ 1. Complete the statement.

An exponent tells you how many times to multiply the base by _____.

■ 2. Is 2^3 the same as 3^2? Why or why not?

■ 3. Find the sum.

$5^3 + 2^4$

■ 4. Write the number using exponents.

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

■ 5. Find the product.

$3^4 \cdot 3^3$

■ 6. Write the following number without an exponent.

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1^6

■ 7. Write the number using exponents.

$10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$

■ 8. Write the number without an exponent.

9^6

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RULES OF EXPONENTS

■ 1. Find the sum.

$$2x^3 + x^3 + x^3 + 3x^3$$

■ 2. Find the product.

$$x^6 \cdot x^2 \cdot x^3$$

■ 3. Simplify the expression.

$$x \cdot x \cdot x$$

■ 4. Stephanie and Jimmy are trying to find a shortcut to simplify the expression below. Stephanie says that they should add the exponents $(3 + 5 = 8)$ and then raise 4 to that power. Jimmy says that since it's multiplication, they should multiply the exponents $(3 \cdot 5 = 15)$ and then raise 4 to that power. Who is correct and why?

$$4^3 \cdot 4^5$$

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POWER RULE FOR EXPONENTS

■ 1. Complete the statement.

The power rule tells us that, when you raise a power to a power, you can _____ those powers together.

■ 2. Simplify the expression.

$(x^3)^3$

■ 3. Simplify the expression.

$(x^2)^{-4}$

■ 4. Simplify the expression.

$(2^m)^p$

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QUOTIENT RULE FOR EXPONENTS

■ 1. Simplify the expression.

$$\frac{x^5}{x^6}$$

■ 2. Simplify the expression.

$$\frac{x^{2a}}{x^2}$$

■ 3. Simplify the expression.

$$\frac{(x^{2p})^3}{x^{3p}}$$

■ 4. Simplify the expression.

$$\frac{(x^{3a+4})^2}{x^{4a}}$$

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